# Gasogen 29 - 93kW

## Wood Fired Boiler

## User Operating Instructions

AutomaticHeating
efficiency ▢ performance ▢ solutions

# Contents

CONTENTS

1 Symbols used in this manual ..... 2
2 Correct use of the appliance ..... 2
3 Water treatment ..... 2
4 Information to be passed over to the end user by the installer/servicing engineer ..... 3
5 Safety warnings ..... 3
6 Operating instructions ..... 4
6.1 Standard control panel ..... 4
6.2 Optional control panel ..... 7
6.3 Checks to carry out before firing the boiler ..... 12
6.4 Boiler start-up ..... 12
6.5 Combustion air adjustment ..... 13
6.6 Checks to carry out after first start-up ..... 14
6.7 Warnings ..... 15
6.8 Summer operation ..... 15
6.9 Servicing ..... 16
6.10 Fault finding ..... 18
-.- Easily replaceable spare parts ..... 20

## 1 - SYMBOLS USED IN THIS MANUAL

**When reading this manual, particular care has to be given to the parts marked with the followings symbols:**

**DANGER! Indicates serious danger for your personal safety and for your life**

**WARNING! Indicates a potentially dangerous situation for the product and the environment**

**NOTE! Suggestions for the user**

## 2 - A CORRECT USE OF THE APPLIANCE

The GASOGEN G3 2S appliance has been designed utilizing today's heating technology and in compliance with the current safety regulations.
However, following an improper use, dangers could arise for the safety and life of the user or of other people, or damage could be caused to the appliance or other objects.
The appliance is designed to be used in pumped hot water central heating systems.
Any other use of this appliance will be considered improper.
UNICAL declines any responsibility for any damages or injuries caused by an improper use; in this case the risk is completely at the user's responsibility.
In order to use the appliance according to the foreseen scopes it is necessary to carefully follow the instructions indicated in this manual.

## 3 - WATER TREATMENT

- The hardness of the mains water supply conditions the frequency with which the heat exchanger is cleaned.
- In hard water areas where the main water can exceed 15°f total hardness, a scale reducing device is recommended. The choice of this device has to be made taking into consideration the characteristics of the water.
- We recommend you to check the state of cleanliness of the domestic hot water heat exchanger at the end of the first year and subsequently every two years; in this occasion check the state of wear of the anode.

## 4. INFORMATION TO BE HANDED OVER TO THE USER BY THE INSTALLER/SERVICE ENGINEER

The user or the person in charge has to instructed on the use and operation of his heating system, in particular:

§ Hand over these instructions to the end user, together with any other literature regarding this appliance placed inside the envelope contained in the packaging. **The user has to keep these documents in a safe place in order to always have them at hand for future reference.**

§ Inform the user on the importance of air vents and of the flue outlet system, stressing the fact that it is absolutely forbidden to make any alterations to the boiler.

§ Inform the user how to check the system's water pressure as well as informing him how to restore the correct pressure.

§ Explain the function of time and temperature controls, thermostats, heating controls and radiators, to ensure the greatest possible fuel economy.

§ Remind the user that it is obligatory to service the appliance at least annually and to carry out a combustion analysis in compliance with the schedule indicated in the national Codes of Practice.

§ If the appliance is sold or transferred to another owner or if the present user moves home and leaves the appliance installed, ensure yourself that the manual always follows the appliance so that it can be consulted by the new owner and/or installer.

## 5. SAFETY WARNINGS

**WARNING!**
**The installation, adjustment, and servicing of this appliance must be carried out by a competent, qualified person and installed in accordance with the current standards and regulations. Failure to correctly install this appliance could cause injury to persons, animals or damage to property. The manufacturer shall not be held liable for any injury and/or damage.**

**DANGER!**
**NEVER try to carry out any repairs or service work on the boiler on your own initiative.**
**Servicing or repairs of the appliance must be carried out by qualified service engineers;**
**UNICAL recommends drawing up a service contract.**
**Bad or irregular servicing could compromise the safe operation of the appliance, and could cause injury to persons, animals or damage to property for which UNICAL shall not be held liable.**

**Modifications to parts connected to the appliance**
**Do not carry out any modifications to the following parts:**
- **the boiler**
- **to the gas, air, water supply pipes and electrical current**
- **to the flue pipe, safety relief valve and to the central heating's drainage pipe**
- **to the constructive components which influence the appliance's safe operation**

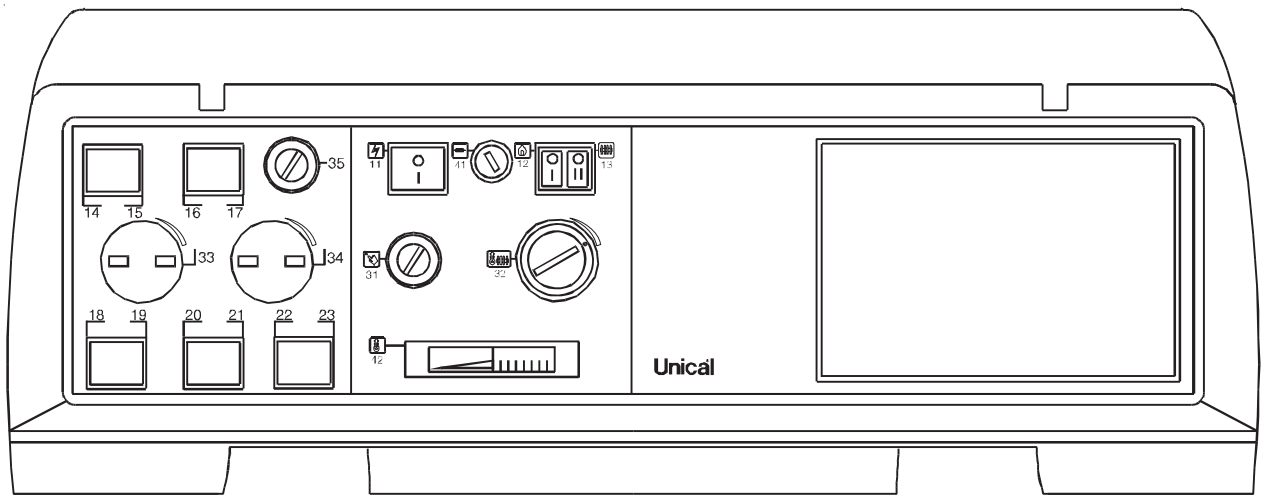
**Smell of gas**
If you smell gas follow these safety indications:
- Do not turn on or off electrical switches
- Do not smoke
- Do not use the telephone
- Close the On/Off gas cock
- Open all windows and doors where the gas leakage has occurred
- Inform the gas society or a company specialized in installing and servicing heating systems

**Explosive and easily inflammable substances**
Do not use or leave explosive or easily inflammable material (as for example: petrol, paint, paper) in the room where the appliance has been installed.

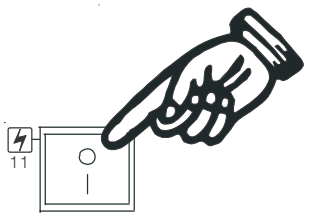
# *Operating instructions*

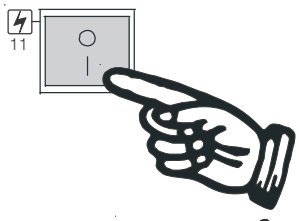
## 6 - OPERATING INSTRUCTIONS

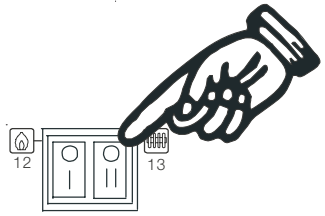
### 6.1 - STANDARD CONTROL PANEL

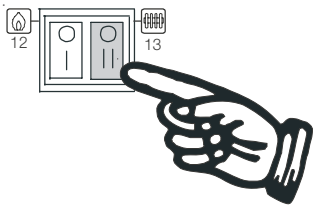



*11. Mains switch*
*12. Fan switch*
*13. System pump switch*
*31. Safety thermostat*
*32. Working thermostat*
*41. Main fuse (4A)*
*42. Boiler thermometer*




**IMPORTANT!**
**Before connecting the control panel to the mains, check that all the switches are in the '0' position and that the safety thermostat is "on".**

### *Boiler start-up*

Using this switch you can connect or disconnect the boiler from the mains electricity supply .

- With the switch in the '0' position the boiler is not switched on (green led light off)

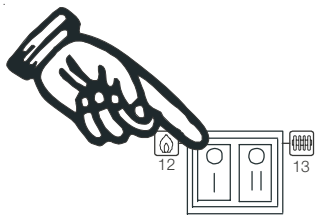
- With the switch in the 'I' position the boiler is connected to the mains electricity supply (green led light illuminated) and is ready to operate.
**The recycle pump functions.**

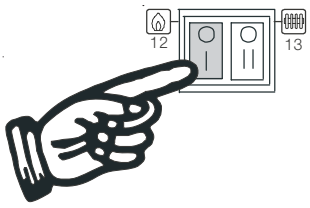
### *Mode selection keys*

With the switch nr. 13 you can connect or disconnect the system pump/boiler load from the mains electrical system.

- With the switch in the '0' position the system pump is not switched on.

- With the switch in the 'II' position the system pump is connected to the mains electricity supply.




With the switch nr. 12 you can connect or disconnect the fan from the mains electrical system.

- With the switch in the '0' position the fan is not switched on.

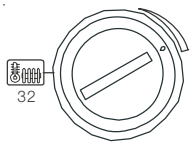
- With the switch in the 'I' position the fan is connected to the mains electricity supply but it will not run. It will start running only after the upper loading door has been closed.

**Note:**
**The upper door is open in order to load the wood and the fan is off. Proceed with igniting the wood as described in paragraph 6.4.**

The opening of the loading door activates a control timer, by means of a microswitch, whose default value is of 30 minutes, which can be increased by another 30 (this can only be carried out by qualified personnel).

If the boiler does not reach the minimum temperature (about 65°C)within the foreseen time (control timer), the fan and recycling pump will be turned off.
**Panel connected to the mains electricity supply, but… the boiler is not running.**

**Therefore repeat the lighting procedure.**




### *Central heating temperature adjustment*

The adjustment of the system water's temperature in the GASOGEN G3 2S boiler is obtained by rotating the knob position 32 in a clockwise direction to increase the temperature and in an antic-clockwise direction to lower it.
The temperature can be adjusted between 75°C minimum and 85°C maximum.

### *Activation of the safety thermostat*

**IMPORTANT**: **The GASOGEN G3 2S safety thermostat's activation command is positioned on the front of the control panel.**

The thermostat in position 31 reactivates the wood fired boilers operation.

To gain access to it in case the boiler goes into lock-out, unscrew the plastic cap with the help of a screwdriver; after having reset it, replace the plastic cap.

## *Operating instructions*

The safety thermostat may intervene in case of boiler overheating. You can avoid this by lowering the working thermostat (see previous point).

If the boiler's safety thermostat intervenes often do not try to relight the boiler yourself. Contact your nearest Unical authorized After Sales Service Centre.

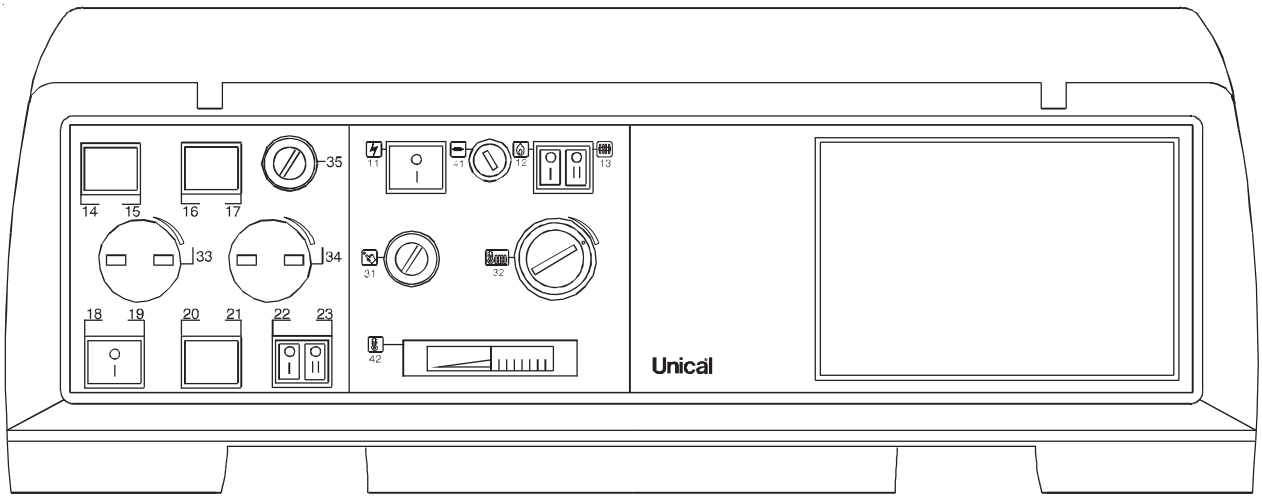
### Central heating system pressure

If it is an open circuit system the pressure does not have to be restored as this occurs automatically via the water level regulator inside the water tank.

If it is a sealed circuit system (refer to local regulations where this type of installation is permitted), the pressure will have to be restored via the mains connection cock, re-pressurizing the system, **when the boiler is cold**, to 1,2/1,3 bar.

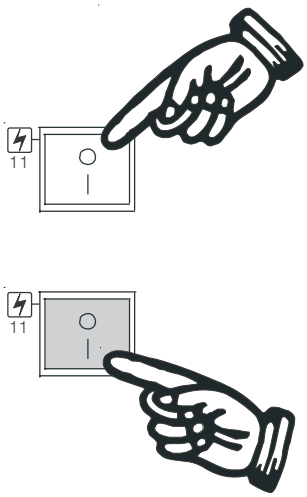
When the correct pressure has been reached, by checking the value indicated in the pressure gauge installed in the system, close the filling cock.

## 6.2 - OPTIONAL CONTROL PANEL




*11. Mains switch*
*12. Fan switch*
*13. System pump switch*
*18. Test key (chimneysweeper mode)*
*22. Selector switch (0) wood (I) gas/oil*
*23. Back-up burner switch*
*31. Safety thermostat*
*32. Boiler temperature adjustment (75° ÷ 85°C)*
*41. Main fuse (4A)*
*42. Boiler thermometer*
*— Acoustic visual led alarm*

**NOTE!**
**The test key in position 18 (which can only be used by qualified service engineers) permits you to check the correct operation of the flue evacuation fan (in temporary mode) without the fan's activation switch in position 12 being activated.**
**The boiler's control panel must be connected to the mains electricity supply via the general switch in position 11.**




**IMPORTANT!**
**Before connecting the control panel to the mains, check that all the switches are in the '0' position and that the safety thermostat is "on".**

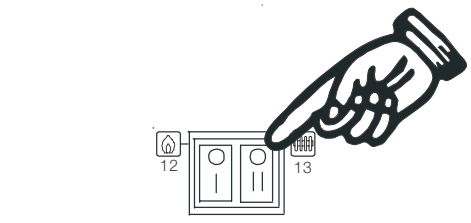
### *Boiler start-up (wood firing mode)*

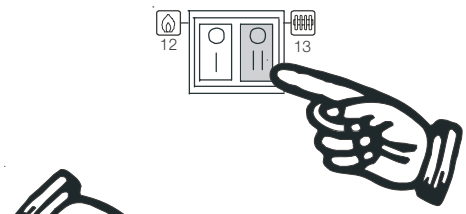
Using this switch you can connect or disconnect the boiler from the mains electricity supply .

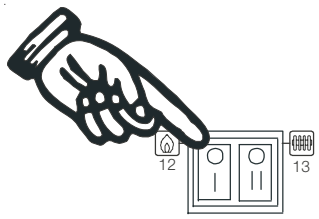
- With the switch in the '0' position the boiler is not switched on (green led light off)

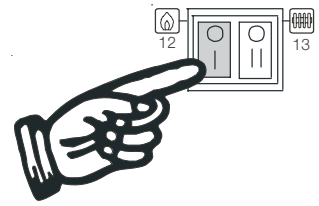
- With the switch in the 'I' position the boiler is connected to the mains electricity supply (green led light illuminated) and is ready to operate.
**The recycle pump functions.**

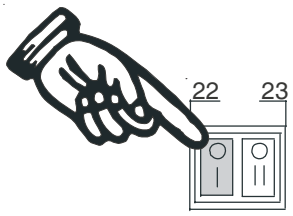
## *Operating instructions*




### Mode selection keys (wood firing mode)

With the switch nr. 13 you can connect or disconnect the system pump/boiler load from the mains electrical system.

- With the switch in the '0' position the system pump is not switched on.

- With the switch in the 'II' position the system pump is connected to the mains electricity supply.

With the switch nr. 12 you can connect or disconnect the fan from the mains electrical system.

- With the switch in the '0' position the fan is not switched on.

- With the switch in the 'I' position the fan is connected to the mains electricity supply but it will not run. It will start running only after the upper loading door has been closed.

With the switch 22 it is possible to select the operation mode (wood or the back-up gas or oil fired boiler).

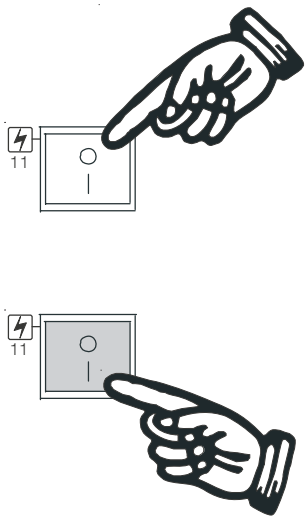
- Place the switch into the'0' position (wood firing mode)

**Note:**
**The upper door is open in order to load the wood and the fan is off. Proceed with igniting the wood as described in paragraph 6.4.**

The opening of the loading door activates a control timer, via a microswitch, with a 30 minutes default value, which can be increased by another 30 (this can only be carried out by qualified personnel).

If the boiler does not reach the minimum temperature (about 65°C) within the foreseen time (control timer), the fan and recycling pump will be turned off.
**Panel connected to the mains electricity supply, but… the boiler is not running.**

**Therefore repeat the lighting procedure.**



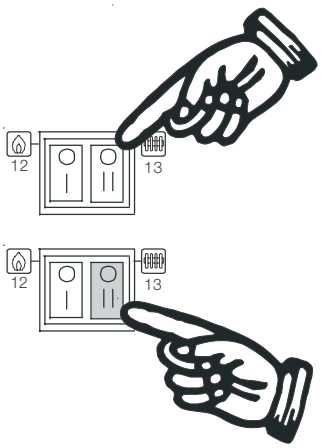

### *Back-up boiler start-up (gas/oil firing mode)*

Using this switch you can connect or disconnect the back-up boiler linked to the GASOGEN G3 2S from the control panel .

- With the switch in the '0' position the back-up boiler is not switched on (green led light off)

- With the switch in the 'I' position the back-up boiler is connected to the mains electricity supply (green led light illuminated) and is ready to fire (wood or gas/oil – refer to following points.

**The recycle pump functions.**



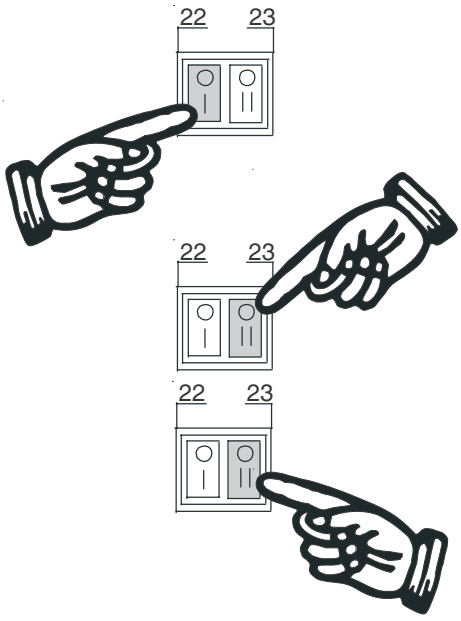

### *Mode selection keys (gas-oil firing mode)*

With the switch nr. 13 you can connect or disconnect the system pump/boiler load from the mains electrical system.

- With the switch in the '0' position the system pump is not switched on.

- With the switch in the 'II' position the system pump is connected to the mains electricity supply.

**Note:**
**The upper loading door must be closed.**




With the switch 22 it is possible to select the operation mode **(wood or the back-up gas or oil fired boiler)**.

- Place the switch into the 'I' position (gas/oil firing mode)

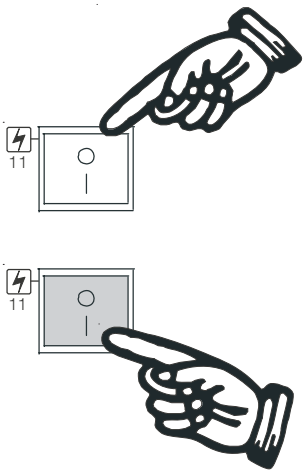
With the switch nr. 23 you can connect or disconnect the burner (gas or oil) from the mains electrical system.

- With the switch in the '0' position the burner is not fired.

- With the switch in the 'II' position the burner is connected to the mains electricity supply.

**The recycle pump is not running.**

# Operating instructions



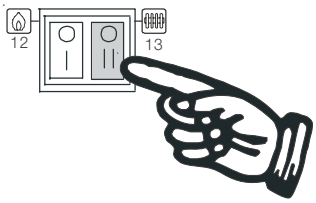

### *Boiler start-up (wood firing mode with automatic switching over to gas or oil firing mode when the wood load has been consumed)*

Using this switch you can connect or disconnect the back-up boiler linked to the GASOGEN G3 2S from the control panel .

- With the switch in the '0' position the back-up boiler is not switched on (green led light off)

- With the switch in the 'I' position the back-up boiler is connected to the mains electricity supply (green led light illuminated) and is ready to fire (wood or gas/oil – refer to following points.

**The recycle pump functions.**



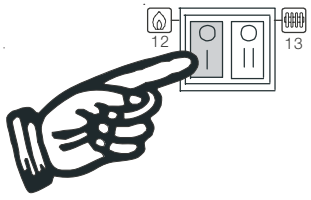

### *Mode selection keys (wood + gas/oil firing mode)*

With the switch nr. 13 you can connect or disconnect the system pump/boiler load from the mains electrical system.

- Set the switch in the 'II' position, the system pump is powered electrically.

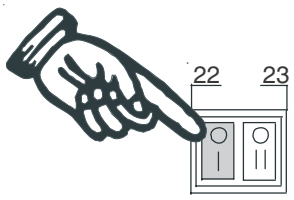
With the switch nr. 12 you can connect or disconnect the fan from the mains electrical system.

- Set the switch in the 'I' position, **the fan is powered electrically** but it will not run. It will start running only after the upper loading door has been closed.



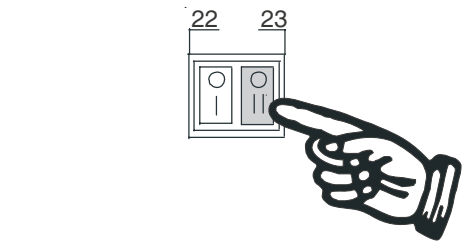

With the switch 22 it is possible to select the operation mode (wood or the back-up gas or oil fired boiler).

- Set the switch into the'0' position (wood firing mode)



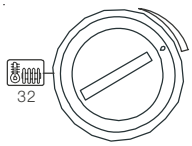

With the switch nr. 23 you can connect or disconnect the burner (gas or oil) from the mains electrical system.

- Set the switch in the 'II' position, the burner will be automatically powered.




Automatic switching over is triggered when the wood fired boiler's temperature falls below 65°C due to the fact that there is no wood left in the fire box, and therefore the back-up gas or oil boiler is activated, and the recycle pump is arrested.
Reinstatement of the initial operating conditions will occur when the boiler's loading door is opened or by removing and then re-establishing the power supply to the control panel.

## Central heating temperature adjustment




The **adjustment of the system water's temperature** in the GASOGEN G3 2S boiler is obtained by rotating the knob in position 32 in a clockwise direction to increase the temperature and in an antic-clockwise direction to lower it.
The temperature can be adjusted between 75°C minimum and 85°C maximum.

You can adjust **the system water's temperature in the back-up oil/gas boiler via the knobs on the boiler's control panel**

## Activation of the safety thermostat

**IMPORTANT**: **The GASOGEN G3 2S safety thermostat's reset is positioned on the front of the control panel.**

The thermostat in position 31 reactivates the wood fired boilers operation.
To gain access to it in case the boiler goes into lock-out, unscrew the plastic cap with the help of a screwdriver; after having reset it, replace the plastic cap.

The safety thermostat can intervene in case of boiler temperature overheating. You can avoid this happening by lowering the working thermostat (see above).

**If the boiler's safety thermostat intervenes often do not try to relight the boiler yourself. Contact your nearest Unical authorized After Sales Service Centre.**

## Central heating system pressure

If it is an open system design the pressure does not have to be restored as this occurs automatically via the water level regulator inside the water tank.

If it is a sealed circuit system (refer to local regulations where this type of installation is permitted), the pressure will have to be restored via the mains connection cock, re-pressurizing the system, **when the boiler is cold**, to 1,2/1,3 bar.

**When the correct pressure has been reached, by checking the value indicated in the pressure gauge installed in the system, close the filling cock.**

**If you need to re-pressurize the system often we recommend you contact your nearest Unical authorized After Sales Service Centre.**

# *Operating instructions*

## 6.3 - CHECKS TO CARRY OUT BEFORE FIRING THE BOILER

Before firing the boiler carry out the following checks:
- Check that the On-Off gas valve, positioned upstream of the boiler, is in the On position (back-up boiler with burner operating with gas).
- Check that any On-Off valves fitted on the flow and return pipes for servicing purposes are in the On position.
- Check that any On-Off valves fitted on the cold water inlet for servicing purposes are in the On position.
- Check that the safety relief valves are connected to the sewage system.

- Check that the boiler is connected to the electrical supply; the main switch in position 11 on the control panel must be illuminated when set to 'I'.
- Check the heating system pressure, indicated by the pressure gauge (refer to 'Central heating system pressure'). For correct operation the pressure should be between 1 and 1,2 bar (with the pump not running).If the pressure falls below 1 bar, when the system is cold, re-pressurise the system by regulating the filling valve.
- Check that the by-pass is open when the door is opened and/or the correct operation via a pushing rod, which can be found on the right hand side of boiler body, and controls the microswitch, which in turn consents fan operation.
- Check fan operation with the loading door closed.

### Shutting down the boiler

If the boiler is completely shut down, the DHW mode will be completely disenabled.

To completely shut down the boiler remove the power supply by opening the contact on the bi-polar switch upstream of the boiler and setting the switch '11' in the **'0'** position: the led will be unlighted.

Place the On/Off gas cock into the Off position (eventual back-up boiler with gas operating burner) and turn the cold water supply cock into the Off position.

**WARNING!**
**The heating system can be effectively protected from frost by using specific antifreeze products suitable for multi metal heating systems.**
**Do not use anti-frost products designed for motor vehicles because they could seriously damage the water sealing gaskets.**

## 6.4 - BOILER START-UP

Ensure yourself that all the checks listed in the paragraph 6.3 have been carried out. Open the upper loading door and place on the main stone, above the central slot, some dry wood, in a crosswise arrangement.
Use easily inflammable material, avoiding big or squared logs.
Open the lower door.
Using thin paper (newspapers or magazines) light the fire.
Close the door, leaving it slightly ajar.
Wait a few minutes until the fire starts and the some embers are produced (about 5-10 minutes).
Close the lower door, close the upper door and start the fan (see point 6.1).
After a few minutes, looking through the sight glass on the lower door you will see that the flame is beginning to reverse downwards, at this point add some bigger logs.

**Important: during boiler operation the by-pass must always be perfectly closed.**

The wood logs must be of the following size:

a) 50 cm (+ 1 cm, - 4 cm)
for the GASOGEN G3 25/40 2S models
b) 70 cm (+ 1 cm, - 4 cm)
for the GASOGEN G3 50/60 models
c) 100 cm (+ 1 cm, - 4 cm)
for the GASOGEN G3 80 2S

***This dimension must be stringently respected.***

In order to have a good combustion it is essential that the wood falls down in a uniformed way. Therefore it is necessary to make sure that the length of the wood logs introduced, their shape and the way they are loaded does not prevent the wood from falling down in a regular way.
The wood logs must be placed in a lengthwise and a horizontal position.
No logs must be placed in an oblique or slanted direction.

**SUBSEQUENT WOOD LOADINGS**

Before filling the boiler with a new load of wood, use up the previous one as much as possible.

The boiler can be filled with a new load when the bed of embers is about 5 cm thick.

Slowly open the upper loading door and the inner anti smoke flap.

The wood logs must have the length specified in the previous paragraph and they must be placed as previously described.

## USEFUL SUGGESTIONS and LOADING ERRORS TO BE AVOIDED

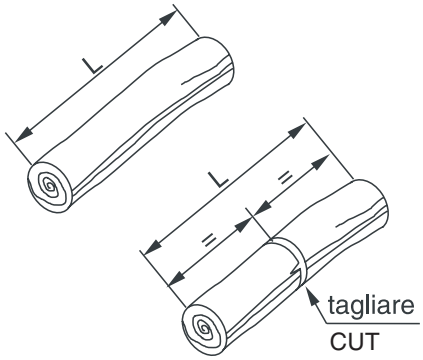
- Logs too long do not fall down properly and can cause obstructions.

- Logs too short cause irregular air passages, with consequent reduction in output and efficiency.

- In case the quality of the wood causes “obstructions” it could become necessary to cut the wood logs in two parts in order that the total length “L” is as indicated in the previous paragraph.

- Always open the upper door slowly in order to avoid blow-backs and smoke formation.

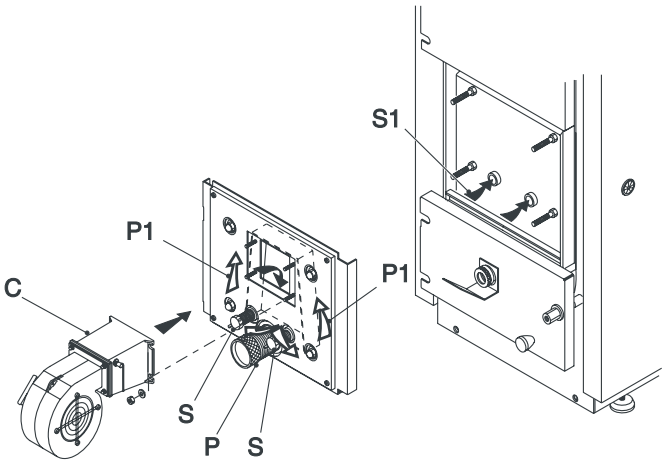
**During normal boiler operation it is absolutely forbidden to open the lower combustion door.**




## 6.5 - COMBUSTION AIR ADJUSTMENT

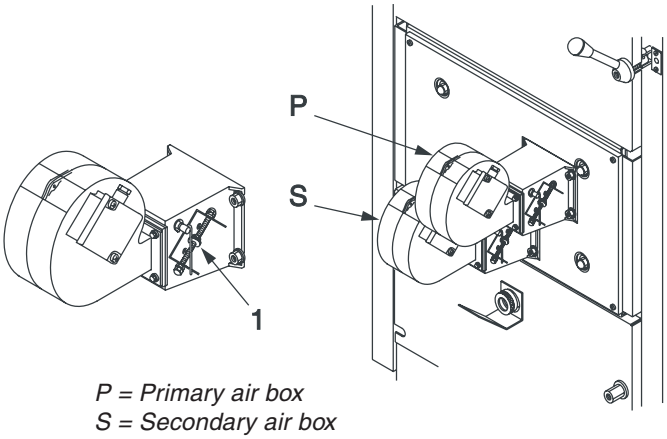
### PRIMARY AND SECONDARY AIR ADJUSTMENT

The GASOGEN G3 25/ and 50 2S models are equipped with a fan control box for combustion air (pos. 1), with an air distributor, and with primary (pos. P) and secondary air adjusters. (pos. S).




*C Fan control box*
*S Secondary air adjusting screws*
*P Primary air adjusting screw*
*P1 Primary air passages*
*S1 Secondary air passages*

The GASOGEN G3 65 2S and GASOGEN G3 80 2S models are equipped with two fan control boxes for combustion air (pos. 1), the top one (P) for the primary air inlet and the bottom one (S) for the secondary air inlet, air distributors, and metal ring adjusters. (pos. 1).




*P = Primary air box*
*S = Secondary air box*
*1= Metal ring air adjuster*

During the first ignition it is necessary to adjust the primary and secondary air, keeping in mind that the primary air determines the boiler’s output and therefore the quantity of wood burnt, whilst the secondary air completes the combustion.

## *Operating instructions*

For correct air adjustment it will be necessary to observe the flame through the sight glass, placed on the lower door. The flame will have to occupy about two thirds of the combustion chamber, and will have to quietly lick the lower cradle, without moving the ash too much and without making any noise.
The flame must be an orange-pink-white colour, not too transparent and with the centre part veering to light blue.

The GASOGEN G3 25/40 and 50 2S models: t**o bring the flame to optimal conditions,** it will therefore be necessary **to regulate the primary air** by screwing or unscrewing the screw (pos. P); the same operation must be carried out for the secondary air with the screws placed in position S.

The GASOGEN G3 65 2S and GASOGEN G3 80 2S models: t**o bring the flame to optimal conditions,** it will therefore be necessary **to regulate the primary air** by screwing or unscrewing the metal ring nut (pos. 1) on the air distributor; the same operation must be carried out for the secondary air on the second air distributor.

Example n.1
**Thick, wet wood logs = difficult combustion**
S - Very closed (try to get the maximum dimension of the flame, but not a reddish colour).
P - Reasonably open in order to obtain a sufficient gasification.

Example n. 2
**Very inflammable wood logs**
S - Completely open.
P - Slightly closed to reduce the gasification, but sufficiently open to evacuate the ash that can close the combustion head.

### GENERAL SUGGESTIONS

Better performances are obtained after two - three days of operation. The refractory cement, in fact, needs to be baked and the tar has to cover the upper part of the fire box.

- **The flame has to have good dimensions and reasonably fill-up the combustion chamber.**

- The **flame** must not be **too red** (lack of secondary air S).

- The **flame** must not be **too blue** (excess of secondary air S).

- The **flame** must not be **too noisy** (excess of primary air P).

- The **flame** must not be **too small** (lack of primary air P).

- If **the ash does not falls down properly** - increase the primary air P.

- If **too much ash falls down -** reduce the primary air P.

- If **the chimney smokes -** open the secondary air S completely.

- If **the chimney continues smoking** - adjust the secondary air S to maximum and reduce the primary air. P.

### AIR ADJUSTMENT FAULTS

1) If **the primary air is excessive** a lot of ash and small pieces of coal will fall through the slot into the combustion chamber. The flame is too fast, dry, a cold colour and makes a noise.
The boiler is consuming a lot of wood and the door's refractory insulation is white.

2) If **the primary air is insufficient** the flame will be slow, indecisive, influenced by air currents and by the chimney draught, very small, incapable of touching the lower cradle, with low ash production and the door's refractory insulation will be of a dark colour.

3) If **the secondary air is excessive** the flame will be small, a blueish colour and very transparent.

4) If **the secondary air is insufficient** the flame will be big, it will touch the lower cradle, it will completely fill the combustion chamber and, above all, it will be a red colour and not transparent

## 6.6 - CHECKS TO CARRY OUT AFTER THE FIRST START-UP

### SOUNDNESS CHECK

During the first start-up check the soundness of the seals of the flue circuit and the chimney connection.
If you notice smoke leakages inform the installer or the After Sale Service. If you notice air
suctions through the door's seals, close the door handle with greater strength.
Check the normal operation of the working thermostat Te (32) at full until it arrests the fan.
Check there are no water leaks from the water connections.
After the first start-up, with the boiler OFF, open the lower door and inspect the internal walls and the door insulation which has to be of a white colour, indication of a correct air adjustment.
On the contrary, if the walls are blackened, it means that the secondary air is not working properly (paragraph 6.5).

## 6.7 - WARNINGS

### HOW TO AVOID CORROSION IN THE FIRE WOOD BOX

**The use of wood with a high moisture content (higher than about 25%) and/or loadings not proportioned to the system's heat request (long OFF periods with the wood storage full) can cause considerable condensate formation in the fire box's internal wall.**
Check, once a week, the internal steel walls of the fire box. They must be covered by a slight layer of opaque coloured, dry tar, with bubbles inclined to break and fall off.
On the contrary, if the tar is bright, runny and, if removed with the fire stoke, some liquid appears, it is necessary to use wood with a lower moisture content and/or reduce the quantity of the wood when loading the boiler.
If, in despite of these interventions the tar does not dry, you must inform the local After Sales Service of this.
The condensate inside the fire box causes the corrosion of the steel plates.
Corrosion is not covered by the guarantee, because it is caused by a bad use of the boiler (wet wood, excessive loadings, etc.).

### CORROSION IN THE FLUE CIRCUIT

The flue is rich in water steam, due to combustion and the use of wood which always retains water.
If the flue comes into contact with relatively cold surfaces (with a minimum temperature of about 60 - 70 °C), the steam water condensates and, in combination with other combustion products, originates corrosion phenomena of the metallic parts.
Every day check if there are signs of smoke condensation (black liquid on the floor, behind the boiler). In this case you must use a wood with a lower moisture content; check that the recirculation pump is working correctly, the flue temperature at part load, and increase the working temperature. To control the room temperature it is therefore necessary to install a mixing valve.
**The corrosion caused by flue condensation is not covered by the guarantee, because it is caused by the wood's moisture content and the way the boiler is used.**

### PRECAUTIONS TO TAKE DURING BOILER OPERATION

After every air adjustment , wait 5 to 10 minutes before making a new adjustment. Once the best adjustment has been established, at the end of the day check that the surfaces of the combustion chamber and the door insulation are of a white colour.
In the ash deposited in the cradle there must be only a few unburnt embers. If the primary air is in excess, in the ash there will be embers and small pieces of coal, the flame will burn fast, be dry, have a cold colour and be noisier, and the output will be excessive (paragraph 6.5).
If the primary air is insufficient the flame burn slowly, be small, it will not touch the lower cradle and it will drag little ash; the output will be insufficient.
If the flame is a dark orange colour, the secondary air is insufficient and the surfaces of the combustion chamber will not be a white colour; if it is small and blue there is too much secondary air.
Always open the upper loading door and the internal antismoke flap slowly.
If, in despite of these precautions, some blow back will occur, it will be necessary to use bigger pieces of wood, with a higher moisture content, and to check that the boiler does not remain unused for a long time (reduce the primary air - paragraph 6.5) and make sure that the possible distortion of the cast iron fire bars or the modification of the stainless steel grates or that the presence of extraneous bodies (nails, metallic pieces) has not obstructed the refractory burner's slot.

## 6.8 - SUMMER OPERATION

Use of the boiler in summer for the production of only domestic hot water is not advised, unless you follow these rules meticulously:
1) Use very dry wood
2) Do not load the boiler with too much wood, load the boiler partially, 2 or 3 times per day ,according to need.

**Important.**
It is absolutely wrong to load the boiler completely so as to gain very long working periods (for
example 24 hours). Doing so the boiler (when the fan is OFF) will produce a lot of acid condensate
and corrode the fire box.

# *Operating instructions*

## 6.9 - SERVICING

**Danger !**
**Before servicing the boiler, make sure the boiler and its components has cooled down.**

### Warnings

Do not drain any water from the boiler, even only partially, unless absolutely necessary. Periodically check that the chimney is working correctly and that it is in good condition.

Do not clean the boiler and/or its parts with easily inflammable products (gasoline, alcohol, etc.).

Do not leave inflammable products in the room where the boiler is installed.

Do not clean the boiler room when the boiler is firing.

**IMPORTANT**

**For cleaning the boiler use brushes and a vacuum cleaner. If pieces of cloths are used make sure they are all recovered.**
**Always keep the screws and nuts protected with grease.**

### CLEANING AND ORDINARY MAINTENANCE OF THE WOOD FIRED BOILER

**Every day**

- Remove the ash from the lower cradle.
- Remove, with the help of the scraper supplied with the boiler, the embers so that the ashes, accumulated in the fire bed will fall down through the holes in the grate.
This operation will help to avoid the grate becoming obstructed and the subsequent bad operation of the boiler. This operation has to be carried out when there is not much flame, and, in any case, before wood loading.

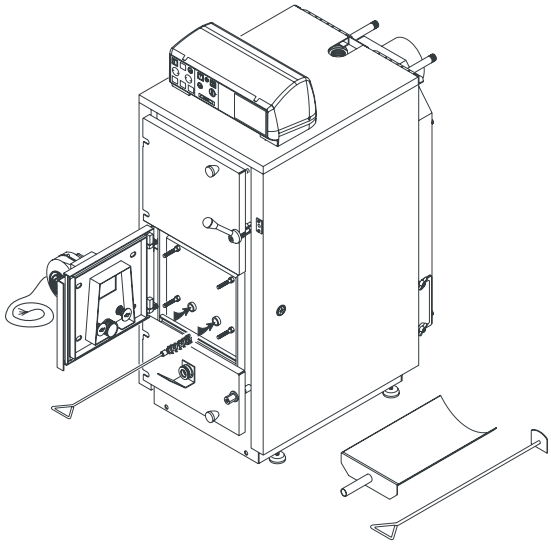
**Every week**

- Remove carefully all the residues of combustion accumulated in the fire box.
- Clean, with the brush supplied, the triangular passes of the combustion chamber.
- Remove the ashes from the flue chamber via the side doors, using the scraper.
- Make sure the grate's slots are not obstructed; if so, free the passages using the poker.
- If the boiler continues to operate badly, even after having cleaned it as described above, it could be caused by bad distribution of the secondary air.

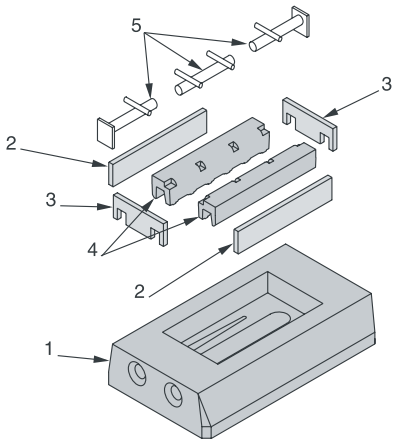
**In this case:**

1) Check the adjustment of the air setting, according to the instructions given in the paragraph "Combustion air adjustment".

2) Check that the two holes for the secondary air, placed in the front part of the main stone, just in front of the two adjustment screws, are not obstructed; if they are, pass a **soft brush** in both the holes, as shown in the following figure.



Check that the fire bars and the steel grate are positioned correctly in their housing and that the side wool insulation is in place.




1. Main stone
2. Side fire bars insulation
3. Front/rear fire bars insulation
4. Iron fire bars
5. Stainless steel grate

**The iron fire bars and the steel grate are subject to wear; we therefore recommend you to service the boiler at least once a year, in order to avoid bad boiler operation.**

Note: the above figure is generic, the quantity of the iron bars and the steel grates can vary according to the boiler model.

### Every month

Check that the by-pass is working correctly.
The by-pass is a direct passage between the fire box and the chimney. It is normally closed by a mobile shutter. The by-pass is automatically opened or closed via a pushing rod when the loading door is opened. In this way the smoke accumulated in the firebox is aspirated and sent to the chimney directly. The bypass, in conclusion, allows the smoke to be discharged at the chimney without letting it escape from the upper loading door when loading the wood or during lighting.

## EXTRAORDINARY MAINTENANCE OF THE WOOD FIRED BOILER

At the end of each heating season perform a general cleaning of the boiler, taking care to remove all the ashes from the fire box. During the summer season the boiler doors must be closed.

### Cleaning the fan

**WARNING:**
**This operation must be carried out only by a competent qualified technician, as bad maintenance will compromise good boiler operation.**

## CLEANING AND ORDINARY MAINTENACE OF THE BACK-UP GAS/OIL BOILER

### At the beginning of every heating season

Call a service engineer to check and clean the boiler.

### Burner control

The burner must be checked solely by persons authorized by the burner manufacturer .

# *Operating instructions*

## 6.10 - FAULT FINDING

### WOOD FIRED BOILER WITH STANDARD CONTROL PANEL:

**Problem:**
- The fan does not start

**Remedy:**
- Adjust the working thermostat (pos. 32) to maximum.
- Reset the safety thermostat (pos. 31).

**Problem:**
- The fan starts, but after 30 minutes it stops;
by switching OFF and ON the main switch (pos. 11) it re-starts.

**Remedy:**
- Increase the temporized relay's intervention time (this has to be done by the After Sales Service or by authorized trained personnel after switching OFF the mains supply).

**Problem:**
- When opening the loading door there are blowbacks and flue formation.

**Remedy:**
- Open the door slowly.
- Use wood with a higher moisture content; make sure the boiler does not remain unused for long periods (see paragraph 6.7).
- Use thicker wood logs.
- Use up all the wood before loading a new batch

**Problem:**
- The boiler does not reach the requested temperature.
The flame is small and there is too much air.
When the fire box is checked a formation of log bridges is found.

**Remedy:**
- Check the length of the wood logs (see paragraph 6.4).
- Check how the wood logs are loaded in the fire box (see paragraph 6.4).
- Cut the logs in two parts (see paragraph 6.4).
- Use smaller logs (round or square, 5 to 7 cm diam. )
- Mix medium-large sized logs (15-20 cm diam.)with small sized logs (see previous point).

**Problem:**
- The boiler does not reach the requested temperature. The flame is too small.

**Remedy:**
- Check if the by-pass is closed.
- Check the fan
- Check if the doors are properly closed

If you cannot solve the problem, do no attempt any other interventions and **contact an authorized UNICAL After Sales Service.**

## WOOD FIRED BOILER WITH OPTIONAL CONTROL PANEL:

**Problem:**
- The fan does not start

**Remedy:**
- Adjust the working thermostat (pos. 32), turning the knob in a clockwise direction to maximum.
- Reset the safety thermostat (pos. 31).

**Problem:**
- The fan starts, but after 30 minutes it stops; by switching OFF and ON the main switch (pos. 11) it re-starts.

**Remedy:**
- Increase the TIMER 1 intervention time (this operation has to be carried out by the After Sales Service or by authorized trained personnel after switching OFF the mains supply).

**Problem:**
- When opening the loading door there are blowbacks and flue formation.

**Remedy:**
- Open the door slowly.
- Use wood with a higher moisture content; make sure the boiler does not remain unused for long periods (see paragraph 6.7).
- Use bigger logs.
- Use up all the wood before loading a new batch

**Problem:**
- The boiler does not reach the requested temperature.
The flame is small and there is too much air.
When the fire box is checked a formation of log bridges is found.

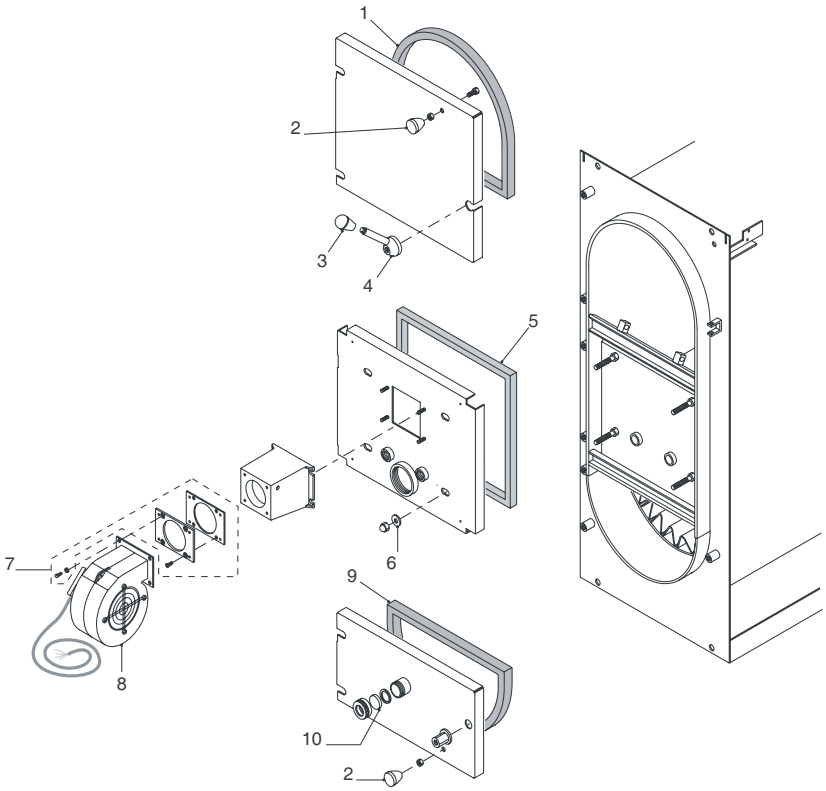
**Remedy:**
- Check the length of the wood logs (see paragraph 6.4).
- Check how the wood logs are loaded in the fire box (see paragraph 6.4).
- Cut the logs in two parts (see paragraph 6.4).
- Use smaller logs (round or square, 5 to 7 cm diam. )
- Mix medium-large sized logs (15-20 cm diam.)with small sized logs (see previous point).

**Problem:**
- The boiler does not reach the requested temperature. The flame is too small.

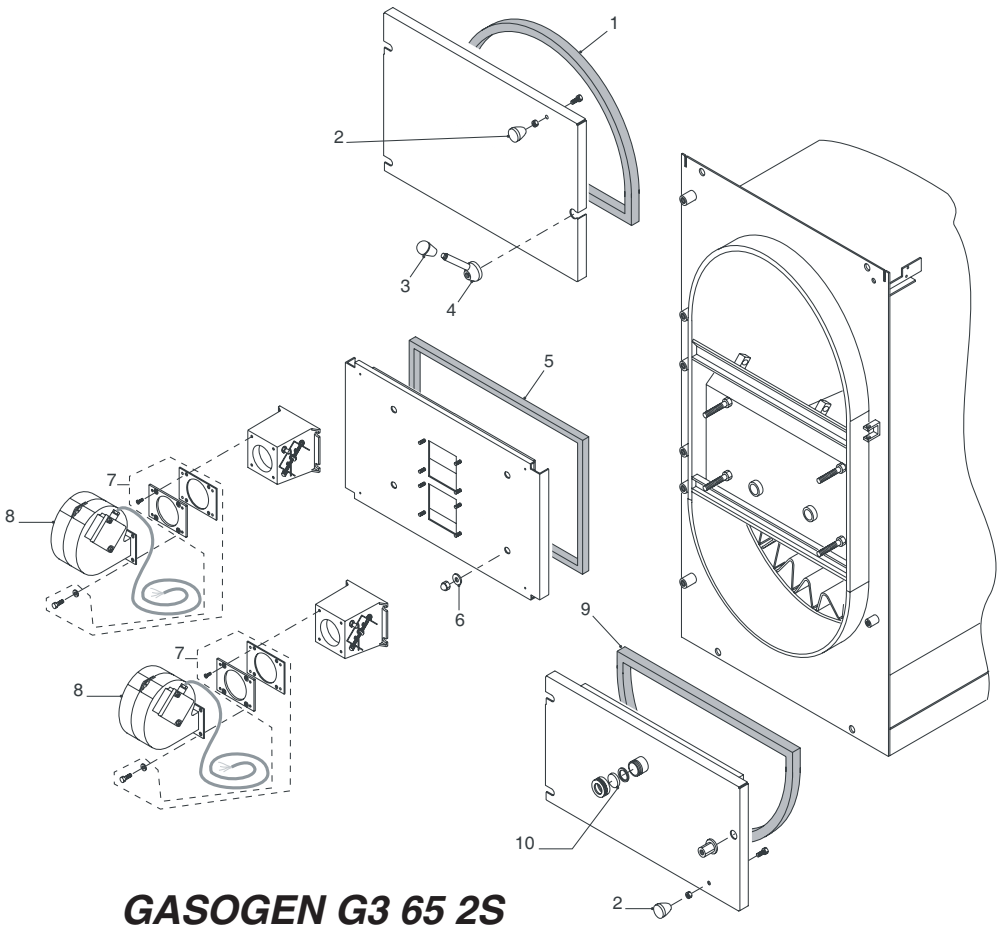
**Remedy:**
- Check if the by-pass is closed.
- Check the fan
- Check if the doors are properly closed

If you cannot solve the problem, do no attempt any other interventions and **contact an authorized UNICAL After Sales Service.**

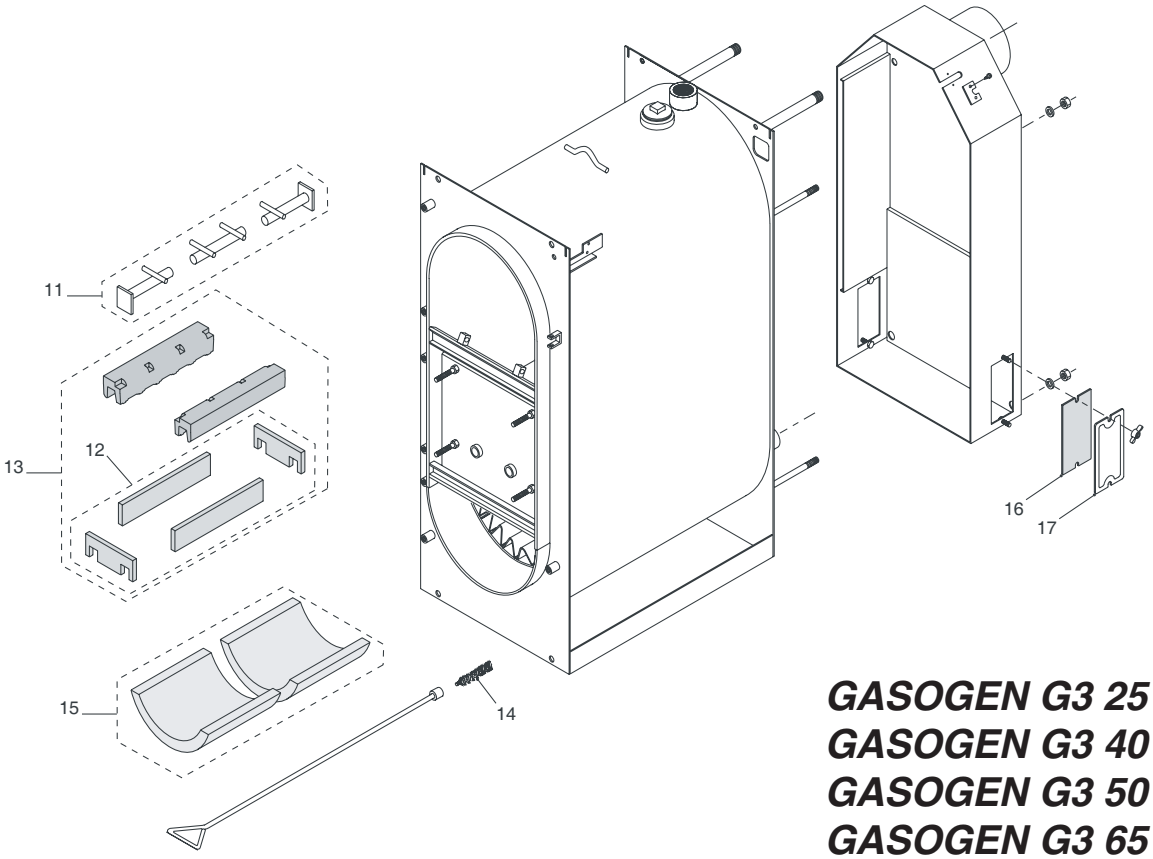
## *Spare parts*




***GASOGEN G3 25 2S***
***GASOGEN G3 40 2S***
***GASOGEN G3 50 2S***




***GASOGEN G3 65 2S***
***GASOGEN G3 80 2S***




## GASOGEN G3 25 2S
## GASOGEN G3 40 2S
## GASOGEN G3 50 2S
## GASOGEN G3 65 2S
## GASOGEN G3 80 2S

| COMPONENT | | | BOILER MODEL | | | | |
|---|---|---|---|---|---|---|---|
| POS. | Part n° | DESCRIPTION | GASOGEN G3 25 2S | GASOGEN G3 40 2S | GASOGEN G3 50 2S | GASOGEN G3 65 2S | GASOGEN G3 80 2S |
| 1 | 20446 | Fibre glass gasket 16x21 | m. 1,2 | m. 1,45 | m. 1,45 | m. 1,6 | m. 1,6 |
| 2 | IMP0010 | Grip M8 | X | X | X | X | X |
| 3 | MAN0010 | Handle grip | X | X | X | X | X |
| 4 | VOL0010 | Handle | X | X | X | X | X |
| 5 | 20446 | Fibre glass gasket 16x21 | m. 1,4 | m. 1,65 | m. 1,65 | m. 1,8 | m. 1,8 |
| 6 | GAM0010 | Gasket diam. 24,5x10x3 | X | X | X | X | X |
| 7 | GRP2021 | Fan fixing kit | X | X | X | X | X |
| 8 | VNT0002 | Fan | X | X | X | X | X |
| 9 | 20446 | Fibre glass gasket 16x21 | m. 1 | m. 1,2 | m. 1,2 | m. 1,5 | m. 1,5 |
| 10 | 16649 | Tempered glass diam- 29,5x4 | X | X | X | X | X |
| 11 | 11546 | Steel fire bars kit | X | | | | |
| 11 | 11547 | Steel fire bars kit | | X | | | |
| 11 | 11548 | Steel fire bars kit | | | X | | |
| 11 | KIT0467 | Steel fire bars kit | | | | X | |
| 11 | KIT0482 | Steel fire bars kit | | | | | X |
| 12 | 26952 | Stone- cast iron bars insulation kit | X | | | | |
| 12 | 26953 | Stone- cast iron bars insulation kit | | X | | | |
| 12 | 26954 | Stone- cast iron bars insulation kit | | | X | | |
| 12 | 26955 | Stone- cast iron bars insulation kit | | | | X | |
| 12 | 26956 | Stone- cast iron bars insulation kit | | | | | X |
| 13 | 12344 | Cast iron bars +insulation kit | X | | | | |
| 13 | 12346 | Cast iron bars +insulation kit | | X | | | |
| 13 | 12348 | Cast iron bars +insulation kit | | | X | | |
| 13 | 12350 | Cast iron bars +insulation kit | | | | X | |
| 13 | 12352 | Cast iron bars +insulation kit | | | | | X |
| 14 | PUC0420 | Triangular scraper | X | X | X | X | X |
| 15 | 37352 | Catalyst kit | X | | | | |
| 15 | 37353 | Catalyst kit | | X | | | |
| 15 | 37354 | Catalyst kit | | | X | | |
| 15 | 37355 | Catalyst kit | | | | X | |
| 15 | 37356 | Catalyst kit | | | | | X |
| 16 | 11930 | Inspection door kit | X | X | X | X | X |
| 17 | 11929 | Flue chamber inspection door | X | X | X | X | X |
| | | | | | | | |
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| | | | | | | | |

WARNING: For a correct and quick processing of your orders, when ordering spare parts for your GASOGEN G3 2S boiler, please always quote the following information: **Part number, Description, Quantity requested, Boiler model.** If you need any parts not indicated in the above list, please contact an authorized Unical After Sales Service

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